

CLAIM AMENDMENTS

Please amend the claims as described below. In accordance with 37 CFR §1.121, a complete listing of all claims in the application is provided below. Notably, the status of each claim is indicated in the parenthetical expression adjacent to the claim number.

Claims 1 - 50 (**Canceled**).

1 **Claim 51 (Currently Amended):** An EIW unit for use in sensing a parameter of a
2 surface structure that is formed on the EIW by integrated circuit processing equipment
3 which is used to manufacture an integrated circuit, the EIW unit comprising:
4 a substrate having a wafer or wafer-like shape ~~shaped profile~~; and
5 a plurality of sensors, disposed on or in the substrate, to sample the process
6 parameter of the surface structure that is formed above the sensors and on the EIW unit by
7 the integrated circuit processing equipment during processing.

1 **Claim 52 (Currently Amended):** The EIW unit of claim 51 wherein the plurality of
2 sensors includes a plurality of light sensors and wherein the EIW further includes a
3 predetermined surface layer disposed on the EIW and above the plurality of light sensors
4 wherein the predetermined surface layer is ~~capable of receiving a~~ adapted to receive the
5 surface structure thereon.

1 **Claim 53 (Previously Presented):** The EIW unit of claim 52 wherein
2 predetermined surface layer includes a plurality of layers.

1 **Claim 54 (Previously Presented):** The EIW unit of claim 53 wherein the plurality of
2 layers includes a composite dielectric structure.

1 **Claim 55 (Previously Presented):** The EIW unit of claim 52 wherein the
2 predetermined surface layer is patterned to guide or shape the light sampled by the
3 plurality of light sensors.

1 **Claim 56 (Previously Presented):** The EIW unit of claim 52 wherein the
2 predetermined surface layer includes a grating structure having a refractive index.

1 **Claim 57 (Previously Presented):** The EIW unit of claim 56 wherein the refractive
2 index of the grating structure is capable of being changed dynamically.

1 **Claim 58 (Previously Presented):** The EIW unit of claim 56 wherein the EIW unit
2 further includes an acoustic modulation module disposed in or on the substrate to control
3 the refractive index of the grating structure.

1 **Claim 59 (Previously Presented):** The EIW unit of claim 51 wherein the plurality of
2 sensors operates in an end-point mode.

1 **Claim 60 (Previously Presented):** The EIW unit of claim 51 wherein the plurality of
2 sensors operates in a real-time mode.

1 **Claim 61 (Currently Amended):** The EIW unit of claim 51 wherein the plurality of
2 sensors includes a plurality of light sensors and wherein the light sensors sample light that
3 is reflected or scattered by the surface structure ~~formed by the integrated circuit processing~~
4 ~~equipment during processing.~~

1 **Claim 62 (Previously Presented):** The EIW unit of claim 61 further including a first
2 light source, disposed on or in the substrate, to output light to permit sampling of the
3 process parameter of the surface structure by the plurality of sensors.

1 **Claim 63 (Currently Amended):** The EIW unit of claim 62 wherein the intensity of
2 the light output by the first light source ~~may be~~ is varied or modulated.

1 **Claim 64 (Currently Amended):** The EIW unit of claim 62 further including a
2 second light source disposed on or in the substrate, to output light to permit sampling of the
3 process parameter of the surface structure by the plurality of sensors and wherein the
4 intensity of the light output by the first light source ~~may be~~ is varied or modulated relative to
5 the second light source.

1 **Claim 65 (Currently Amended):** The EIW unit of claim 62 wherein the process
2 parameter is a thickness of the surface structure ~~formed above the sensors and on the EIW~~
3 ~~unit by the integrated circuit processing equipment during processing.~~

1 **Claim 66 (Previously Presented):** The EIW unit of claim 61 wherein the plurality of
2 light sensors is CMOS devices, charge coupled devices, or photodiodes.

1 **Claim 67 (Previously Presented):** The EIW unit of claim 61 wherein the plurality of
2 light sensors periodically or continuously samples the intensity of the light while the EIW
3 unit is disposed in the integrated circuit processing equipment and undergoing processing.

1 **Claim 68 (Previously Presented):** The EIW unit of claim 67 further including data
2 storage, coupled to the plurality of light sensors, to store data which is representative of the
3 parameter of the surface structure.

1 **Claim 69 (Previously Presented):** The EIW unit of claim 67 further including:
2 communication circuitry to provide the data which is representative of the parameter
3 to external circuitry; and
4 at least one rechargeable battery, to provide electrical power to the communication
5 circuitry.

1 **Claim 70 (Previously Presented):** The EIW unit of claim 67 wherein the process
2 parameter is a surface profile of the surface structure.

1 **Claim 71 (Currently Amended):** A method of measuring a process parameter of a
2 surface structure that is formed by an integrated circuit manufacturing process wherein the
3 method of measuring the process parameter uses an EIW unit having a substrate, which

4 ~~includes a wafer shaped profile~~, and a plurality of sensors disposed on or in the substrate,
5 the method comprising:
6 placing the substrate into the integrated circuit processing equipment;
7 performing the integrated circuit manufacturing process that forms a surface
8 structure above the plurality of sensors during the manufacturing process;
9 enabling the plurality of sensors to sample the process parameter of the surface
10 structure;
11 sampling the process parameter of the surface structure using the plurality of
12 sensors; and
13 determining the process parameter of the surface structure using data from the
14 plurality of sensors.

1 Claim 72 (**Previously Presented**): The method of claim 71 wherein the EIW unit
2 further includes a predetermined surface layer having a refractive index wherein the
3 predetermined surface layer is disposed above the plurality of light sensors and wherein
4 the method further includes changing the refractive index of the predetermined surface
5 layer.

1 Claim 73 (**Currently Amended**): The method of claim 72 further including
2 dynamically changing the refractive index of the predetermined surface layer while or after
3 performing the integrated circuit manufacturing process.

1 **Claim 74 (Previously Presented):** The method of claim 71 wherein the process
2 parameter of the surface structure that is formed by the integrated circuit manufacturing
3 process is sampled after performing the integrated circuit manufacturing process.

1 **Claim 75 (Previously Presented):** The method of claim 71 wherein the process
2 parameter of the surface structure that is formed by the integrated circuit manufacturing
3 process is sampled while performing the integrated circuit manufacturing process.

1 **Claim 76 (Previously Presented):** The method of claim 71 wherein the EIW unit
2 further includes a plurality of light sources wherein the plurality of sensors samples the light
3 output by the plurality of light sources and wherein the method further includes enabling the
4 plurality of light sources to output light and wherein sampling the process parameter of the
5 surface structure using the plurality of sensors includes sampling the response to the light
6 output by the plurality of light sources using the plurality of sensors.

1 **Claim 77 (Previously Presented):** The method of claim 76 wherein the plurality of
2 light sources output light at different wavelengths.

1 **Claim 78 (Currently Amended):** The method of claim 76 wherein sampling the
2 response to the light output by the plurality of light sources includes sampling the light,
3 while or after performing the integrated circuit manufacturing process, that is reflected or
4 scattered by the surface structure ~~formed by the integrated circuit processing equipment~~
5 during processing.

1 **Claim 79 (Currently Amended):** The method of claim ~~76~~ 78 further including
2 varying the intensity of the light output by the plurality of light sources.

1 **Claim 80 (Currently Amended):** The method of claim ~~76~~ 78 further including
2 varying the intensity of the light output by a first light source of the plurality of light sources
3 relative to another light source of the plurality of light sources.

1 **Claim 81 (Previously Presented):** The method of claim 76 wherein sampling the
2 response to the light output by the plurality of light sources includes periodically or
3 continuously sampling the response to the light output by the plurality of light sources while
4 performing the integrated circuit manufacturing process.

1 **Claim 82 (Previously Presented):** The method of claim 76 further including
2 sampling the intensity of the reflected or scattered light using the plurality of sensors.

1 **Claim 83 (Previously Presented):** The method of claim 82 wherein the plurality of
2 light sources is disposed on or in the substrate of the EIW unit.

1 **Claim 84 (Previously Presented):** The method of claim 83 further including varying
2 the intensity of the light output by the plurality of light sources.

1 **Claim 85 (Previously Presented):** The method of claim 83 further including varying
2 the intensity of the light output by a first light source of the plurality of light sources relative
3 to another light source of the plurality of light sources.

1 **Claim 86 (Previously Presented):** The method of claim 83 wherein sampling the
2 response to the light output by the plurality of light sources includes periodically or
3 continuously sampling the response to the light output by the plurality of light sources while
4 performing the integrated circuit manufacturing process.

1 **Claim 87 (Previously Presented):** The method of claim 83 further including
2 sampling the response to the light output by the plurality of light sources after performing
3 the integrated circuit manufacturing process.

1 **Claim 88 (Currently Amended):** The method of claim 83 wherein the EIW unit
2 further includes a predetermined surface layer having a refractive index, wherein the
3 predetermined surface layer is disposed above the plurality of sensors and plurality of light
4 and wherein performing the integrated circuit manufacturing process includes forming the
5 surface structure on the predetermined surface layer.

1 **Claim 89 (Previously Presented):** The method of claim 88 further including
2 changing the refractive index of the predetermined surface layer.

1 Claim 90 (**Currently Amended**): The method of claim 88 further including
2 dynamically changing the refractive index of the predetermined surface layer while or after
3 performing the integrated circuit manufacturing process.

1 Claim 91 (**Previously Presented**): The method of claim 83 wherein the process
2 parameter is a thickness of the surface structure.

1 Claim 92 (**Previously Presented**): The method of claim 71 wherein the process
2 parameter is a thickness of the surface structure.

1 Claim 93 (**Previously Presented**): The method of claim 71 wherein the process
2 parameter is a spatial distribution of a surface structure.

1 Claim 94 (**Currently Amended**): A system for sensing a process parameter of a
2 surface structure that is formed by integrated circuit processing equipment which is used to
3 manufacture an integrated circuit, the system comprising:
4 an EIW unit that is ~~capable of being adapted to be~~ disposed in the integrated circuit
5 processing equipment, the EIW unit including:
6 substrate having a wafer or wafer-like shape ~~shaped profile~~; and
7 a sensor, disposed on or in the substrate, to sample the process parameter of
8 the surface structure that is formed by integrated circuit processing equipment,
9 wherein the sensor samples the process parameter while or after the EIW unit is
10 subjected to processing by the integrated circuit processing equipment; and

11 a computing device to receive the samples from the sensor and determine the
12 process parameter of the surface structure using the samples.

1 Claim 95 (**Previously Presented**): The system of claim 94 wherein the sensor
2 includes CMOS devices, charge coupled devices, or photodiodes.

1 Claim 96 (**Previously Presented**): The system of claim 94 wherein the process
2 parameter is a surface profile of the surface structure.

1 Claim 97 (**Previously Presented**): The system of claim 94 wherein the process
2 parameter is a thickness of the surface structure.

1 Claim 98 (**Previously Presented**): The system of claim 94 wherein the sensor
2 operates in an end-point mode.

1 Claim 99 (**Previously Presented**): The system of claim 94 wherein the sensor
2 operates in a real-time mode.

1 Claim 100 (**Currently Amended**): The system of claim 94 wherein the EIW unit
2 further includes a predetermined surface layer disposed above the sensor wherein the
3 predetermined surface layer is ~~capable of receiving a~~ adapted to receive the surface
4 structure thereon, ~~and wherein the system further includes a source that outputs light.~~

1 Claim 101 (Currently Amended): The system of claim 100 wherein the system
2 further includes a source that outputs light ~~the source outputs light~~ at different wavelengths.

1 Claim 102 (Currently Amended): The system of claim 100 wherein the sensor
2 includes a plurality of light sensors wherein the light sensors sample light that is reflected or
3 scattered by a surface structure that is formed by the integrated circuit processing
4 equipment ~~during processing~~.

1 Claim 103 (Currently Amended): The system of claim 102 wherein the
2 predetermined surface layer is patterned to guide or shape the light output by the a light
3 source that is disposed on or in the substrate.

1 Claim 104 (Previously Presented): The system of claim 102 wherein the
2 predetermined surface layer includes a grating structure having a refractive index.

1 Claim 105 (Previously Presented): The system of claim 104 wherein the refractive
2 index of the grating structure is capable of being changed dynamically.

1 Claim 106 (Previously Presented): The system of claim 102 wherein the EIW unit
2 further includes an acoustic modulation module disposed in or on the substrate to control
3 the refractive index of the grating structure.

1 **Claim 107 (Previously Presented):** The system of claim 100 wherein
2 predetermined surface layer includes a plurality of layers.

1 **Claim 108 (Previously Presented):** The system of claim 107 wherein the plurality
2 of layers includes a composite dielectric structure.

3 **Claim 109 (Previously Presented):** The system of claim 100 wherein the source
4 includes a plurality of light sources disposed in or on the substrate of the EIW unit.

1 **Claim 110 (Previously Presented):** The system of claim 109 wherein the sensor
2 and source operate in an end-point mode.

1 **Claim 111 (Previously Presented):** The system of claim 109 wherein the sensor
2 and source operate in a real-time mode.

1 **Claim 112 (Currently Amended):** The system of claim 109 wherein the intensity of
2 the light output by the plurality of light sources ~~may be~~ is varied or modulated.

1 **Claim 113 (Currently Amended):** The system of claim 109 wherein the intensity of
2 the light output by a first light source of the plurality of light sources ~~may be~~ is varied or
3 modulated relative to another light source of the plurality of light sources.

1 **Claim 114 (Currently Amended):** The system of claim 109 wherein the computing
2 device determines a thickness of a surface layer formed on the EIW unit by the integrated
3 circuit processing equipment ~~during processing~~.

1 **Claim 115 (Currently Amended):** The system of claim 109 wherein the computing
2 device determines a spatial distribution of a surface layer formed on the EIW unit by the
3 integrated circuit processing equipment ~~during processing~~.